

-----claim tree-----

1----2  
+-----4  
+-----3

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-----best-----

5415796  
5851981  
4414128  
5523024  
4715990  
5585342  
5108660  
4105574  
5290472  
5342549  
5096610  
4174304  
6057283  
5252245  
4749509  
5362422  
4421680  
5609678  
4203872  
6432897  
4213873  
4673523  
5549840  
4681704  
4284434  
5939376  
4992213  
4784786  
5468423  
4115548  
6429182  
5817615  
4690779  
4315828  
6177395  
4069066  
5030374  
4540505  
4863629  
5472516  
5298195  
5232632  
6228832  
5108643  
4511488  
5494611  
5082584  
5308400  
3882038  
6535753

-----classlist-----

510/506  
510/424  
134/40  
510/182  
510/433  
510/365  
510/500  
510/435  
510/503

510/509  
510/499  
510/427  
510/505  
134/38  
510/421  
510/101  
510/422  
8/137  
510/417  
510/501  
510/488  
510/434  
510/437  
510/211  
510/197  
510/430  
510/400  
510/491  
510/304  
510/307  
427/3934  
510/431  
510/463  
510/238  
510/418  
510/300  
510/108  
510/212  
510/405  
510/374  
510/371  
510/201  
510/310  
134/2  
510/393  
510/325  
510/213  
134/42  
106/311  
510/432  
510/475  
510/490  
510/425  
510/436  
252/364  
510/198  
510/511  
510/321  
510/305  
510/306  
510/407

-----keywords-----

hub cap vehicle car automobile doors tire fender windshield amylase lipase chitinase cellulase protease b  
utoxyethanol triethanolamine monoethanolamine ammonium borate ammonium carbamate alcohol ethoxylate neodo  
l igepal pluronic tergitol poly-tergent ethylene glycol monobutyl ether monobutyl monobutyl ether glycol  
ether ammonia ammonium hydroxide isopropanolamine isopropanol amine hydroxypropylamine tensiometer penetr  
ation methanol ammonia ethylene glycol thfa butyl cellosolve triton enzyme propylene glycol propylene eth  
ylene glycol alcohol ethylene tetrahydrofurfuryl alcohol furfuryl alcohol butanol isopropanol ethanol met  
hanol alkanolamine ammonium phosphate phosphate ammonium acetate ammonium hydroxide hydroxide ammonium bi  
carbonate bicarbonate ammonium carbonate carbonate carbamate zwitterionic anionic nonionic ammonia surfac  
tant surfaces cleaning claimed automotive propanol glycol alcohol ethylene ammonium acetate borate furfur  
yl tetrahydrofurfuryl

-----references-----

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classes:1 510/304 1 510/305 1 510/306 1 510/307 1 510/310 1 510/371 1 510/374 1 510/500  
score: 600

keywords: protease;triethanolamine;neodol;enzyme;propylene;isopropanol;ethanol;alkanolamine;anionic;nonio  
Page 2

nic;surfactant;cleaning;claimed;glycol;alcohol;ethylene;ammonium;

- mer helped to stably suspend the \*\*enzyme\*\*s, particularly, proteases, in the liquid phase. An exemplary \*\*alkanolamine\*\* is \*\*triethanolamine\*\*. Although the \*\*alkanolamine\*\*s are alkaline buffers and could be expected to affect the performance of the peracid, applicants discovered that its actual benefit was as a phase stabilizer for the \*\*enzyme\*\*s. However, in using \*\*triethanolamine\*\*, it was further discovered that a relatively neat preparation should be used. In preparing detergent formulations containing diethanolamines, it was discovered that even trace amounts of diethanolamines react with the detergent matrix to form an off-color. Thus, \*\*triethanolamine\*\* ("TEA") is preferred for use as the \*\*enzyme\*\* stabilizer. However, it also appears that TEA may impair detergency, oxidant and \*\*enzyme\*\* chemical stability unless used judiciously.

Exemplary water soluble or dispersible polymers could include polyvinyl alcohol, polyvinyl pyrrolidone, hydroxymethyl

- s Nos. 1,298,577, 2,076,011, 2,026,054, 2,026,566, 1,393,042; and U.S. Pat. Nos. 3,951,960, 4,298,290, 3,993,659, 3,980,713 and 3,627,758, incorporated herein by reference. Anti-redeposition agents, such as carboxymethylcellulose, are potentially desirable. Next, foam boosters, such as appropriate \*\*anionic\*\* \*\*surfactant\*\*s, may be appropriate for inclusion herein. Also, in the case of excess foaming resulting from the use of certain \*\*nonionic surfactant\*\*s, anti-foaming agents, such as alkylated polysiloxanes, e.g., dimethylpolysiloxane would be desirable. Also, certain solvents, such as glycol, e.g.s., \*\*propylene glycol\*\*, and \*\*ethylene glycol\*\*, certain alcohols, such as \*\*ethanol\*\* or propanol, and hydrocarbons, such as paraffin oils, e.g., Isopar K from Exxon U.S.A., may be useful to thin these liquid compositions. However, it is again cautioned that the use of solvents is preferably limited. Buffers may also be suitable for use, such as

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classes:1 510/433 1 510/182 1 510/435 1 510/501 1 510/503  
score: 555

keywords: triethanolamine;monoethanolamine;ammonium carbamate;monobutyl;glycol ether;ammonia;ammonium hydroxide;ammonia;ethylene glycol;butyl cellosolve;propylene glycol;propylene;ethylene glycol;alkanolamine;ammonium hydroxide;hydroxide;bicarbonate;ammonium carbonate;carbonate;carbamate;witterionic;anionic;nonionic;ammonia;surfactant;surfaces;cleaning;glycol;alcohol;ethylene;ammonium;acetate;

- yl, or R.sup.5 NHCOR.sup.6, and R.sup.5 is C.sub.1-6 alkyl and R.sup.6 is C.sub.6-20 alkyl. A particularly preferred alkyl pyrrolidone is lauryl pyrrolidone, sold by ISF Chemicals under the brand name Surfadone. Relatively low amounts of the alkyl pyrrolidone are used, preferably, about 0.001-2%, when the level of fragrance is from about 0.01-5%.

#### 4. Buffer System

The buffer system comprises a nitrogenous buffer which is added to the aqueous hard surface cleaners of the invention so as to result in a pH of greater than 6.5, more preferably, between 7 and 14, most preferably between 7 and 13. The buffer can be selected from the group consisting of: ammonium or alkaline earth \*\*carbamate\*\*s, guanidine derivatives, ammonium \*\*carbonate\*\*s, ammonium \*\*bicarbonate\*\*s, diammonium \*\*carbonate\*\*s, \*\*alkanolamine\*\*s, \*\*ammonium hydroxide\*\*s, \*\*ammonia\*\* (which forms \*\*ammonium hydroxide\*\* in situ when added to water) alkoxylalkylamines and alkyleneamines and mixtures

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classes:1 510/405 1 134/40 1 510/424 1 510/425 1 510/430 1 510/431 1 510/432 1 510/434 1 510/436 1 510/437  
score: 554

keywords: monoethanolamine;neodol;pluronic;tergitol;monobutyl;ethylene glycol;propylene;ethylene glycol;ethanol;carbonate;witterionic;anionic;nonionic;surfactant;surfaces;cleaning;claimed;glycol;alcohol;ethylene;ammonium;acetate;

- e present invention in amounts up to about 10% by weight. It is a feature of the present invention, however, that stable, homogenous formulations can be prepared without the need for hydrotropic

materials of this kind, or with only very minor levels (i.e. less than about 4% by weight).

Other suitable ingredients of the present compositions include pH buffering materials such as alkali metal and \*\*ammonium \*\*carbonate\*\*, \*\*bicarbonate\*\*, metasilicates and ortho \*\*phosphate\*\*. These can be added, if appropriate, at levels up to about 10% by weight to provide a compositional pH equal to or greater than about pH 8, preferably greater than about pH9 and more preferably greater than about pH10. Dyes, perfumes \*\*enzyme\*\*, chlorine-releasing agents, polypeptides and protein hydrolysates, soil suspending agents such as carboxy methylcellulose, hydroxymethyl cellulose and polyethylene glycols having a molecular weight of about 400 to about 10,00

- A C.sub.9-11 oxo-alcohol with 8 moles of ethylene oxide, marketed by Shell.
- Dobanol 45-7
  - A C.sub.14-15 oxo-alcohol with 7 moles of ethylene oxide, marketed by Shell.
- \*\*pluronic\*\* L-42
  - A condensation product of ethylene oxide and \*\*propylene\*\* oxide, marketed by BASF-Wyandotte.
- Deriphat 170C
  - N--C.sub.12-14 alkyl-.beta.-amino propionic acid marketed by General Mills.
- Amphoram CP1
  - N--cocoyl-.beta.-amino propionic acid marketed by Pierrefitte-Auby.
- Deriphat 154
  - Disodium-N--tallow-.beta.-amino propionate marketed by General Mills.
- Ethylan HB-4
  - Phenol ethoxylated with 4 moles of ethylene oxide, marketed by Diamond Shamrock.
- HT Soap
  - Sodium soap prepared from hydrogenated tallow.
- CN Soap
  - \*\*monoethanolamine\*\* soa

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classes:1 510/433 1 134/42 1 510/182 1 510/427 1 510/435 1 510/501 1 510/503  
score: 552

keywords: triethanolamine;monoethanolamine;ammonium carbamate;monobutyl;glycol ether;ammonia;ammonium hydroxide;ammonia;ethylene glycol;butyl cellosolve;propylene glycol;propylene;ethylene glycol;alkanolamine;ammonium hydroxide;hydroxide;bicarbonate;ammonium carbonate;carbonate;carbamate;zwitterionic;anionic;nonionic;ammonia;surfactant;surfaces;cleaning;glycol;alcohol;ethylene;ammonium;acetate;

- ed from the group consisting of:  
ammonium or alkaline earth \*\*carbamate\*\*, guanidine derivatives, ammonium \*\*carbonate\*\*, ammonium \*\*bicarbonate\*\*, diammonium \*\*carbonate\*\*, \*\*alkanolamine\*\*, \*\*ammonium \*\*hydroxide\*\*, \*\*ammonia\*\* (which forms \*\*ammonium \*\*hydroxide\*\* in situ when added to water) alkoxylalkylamines and alkyleneamines and mixtures thereof. Optionally and preferably, the co-buffer is selected from ammonium and alkaline earth metal \*\*hydroxide\*\*.
- The nitrogenous buffer is a significant aspect of the invention. Because of its presence, greatly enhanced reduction in streaking and filming of hard \*\*surfaces\*\* is achieved after the inventive cleaner is used to clean the same. The preferred nitrogenous buffers are ammonium \*\*carbamate\*\*, \*\*monoethanolamine\*\*, ammonium \*\*bicarbonate\*\*, \*\*ammonium \*\*carbonate\*\* and ammonium \*\*hydroxide\*\*. Ammonium \*\*carbamate\*\* has the structure NH.sub.2 COO.sup.- NH.sub.4. Use of this particularly preferred buffer obtains outstanding reducti

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classes:1 510/300 1 427/3934 1 510/321 1 510/325 1 510/393 1 510/400 1 510/475  
score: 522

keywords: amylase;protease;triethanolamine;alcohol ethoxylate;neodol;ethylene glycol;enzyme;propylene glycol;propylene;ethylene glycol;isopropanol;ethanol;alkanolamine;hydroxide;carbonate;anionic;nonionic;cleaning;claimed;glycol;alcohol;ethylene;ammonium;

- ble liquid detergent having soil release promoting properties, enzymatic effectiveness and detergency like that of the composition of Example 1, or better, results. The liquid detergent is clear blue and in the absence of dye may be of a light color, so that it can be desirably colored by use of other dyes, too. Instead of the brightener system mentioned, equivalent proportions of Tinopal RBS-200, Tinopal 4226 (CIBA-Geigy) or Phorwite RKH (Mobay Chemical Company) and mixtures thereof may be substituted. In all such cases the substantivity of the fluorescent brightener is improved due to the presence of the higher fatty alcohol ethoxylate sulfate and, unlike other **\*\*anionic\*\*** detergents, such as sodium linear dodecyl benzene sulfonate, the fatty **\*\*alcohol ethoxylate\*\*** sulfate does not destabilize the polymeric soil release promoting agent.

EXAMPLE 3

The formula of Example 1 is changed so that 5% of **\*\*neodol\*\*** 25-3S is present instead of the

- yed within the proportion ranges given. The detergents resulting are clear, stable and non-separating and possess good soil release promoting, **\*\*cleaning\*\*** and brightening properties, like those described in Examples 1-3. Such is also the case when the fluorescent dye, colorant and perfume are omitted from the formulas of this example. Similarly, when **\*\*triethanolamine\*\*** or ionizable salt is present in such formulas beyond the limits given, and when other **\*\*anionic\*\*** detergents, such as sodium higher alkyl benzene sulfonates, are substituted for the **\*\*alcohol ethoxylate\*\*** sulfate the product becomes less stable and less effective in promoting soil release during washing, and when the sodium formate is omitted the effects of the **\*\*enzyme\*\*** are lost after only a few days storage at the elevated test temperature.

In other variations in this example the **\*\*nonionic\*\*** detergent is **\*\*neodol\*\*** 23-6.5 or a mixture of equal parts of **\*\*neodol\*\*** 23-6.5 and **\*\*neodol\*\*** 25-7,